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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/998,551	11/29/2001	Bryce P. Nelson	09820.155	7980

25005 7590 04/29/2004

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EXAMINER	
RILEY, JEZIA	
ART UNIT	**PAPER NUMBER**
1637	

DATE MAILED: 04/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/998,551	NELSON ET AL.	
	Examiner	Art Unit	
	Jezia Riley	1637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *21-27* is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Remarks

1. Applicants' arguments and amendments, filed on 3/15/04, have been approved and entered. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The following rejections and/or objections are either newly applied or reiterated. They constitute the complete set presently being applied to the instant application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-20 are rejected under 35 U.S.C. under 35 U.S.C. 103(a) as obvious over Bamdad et al (US 6,472,148 B1) in view of Chee et al. (US5,837,832).

Bamdad et al. discloses an article suitable for use as a biosensor that includes a molecule of a formula X--R--Ch adhered to a surface of the article as part of a self-assembled monolayer. X is a functionality that adheres to the surface, R is a spacer moiety, and Ch is a chelating agent. A metal ion can be coordinated by the chelating agent, and a polyamino acid-tagged biological binding partner of a target biological molecule coordinated to the metal ion. A method of the invention involves bringing the article into contact with a medium containing or suspected of containing the target biological molecule and allowing the biological molecule to biologically bind to the binding partner. The article is useful particularly as a surface plasmon resonance chip .

The embodiment of the invention represented in FIGS. 8-10 includes a single nucleic acid strand immobilized, preferably covalently immobilized, at a surface and not removable from the surface under disassociation conditions. As used herein, the term "disassociation conditions" is meant to define a situation in which, where a single strand 54 is covalently immobilized at the surface and a complementary strand 56 is hybridized to strand 54, strand 56 can be removed. These conditions include hot water, mild chemical treatment, and other techniques available to those of ordinary skill in the art. The invention also includes single strand 54 immobilized to the surface and not removable therefrom under disassociation conditions, and complementary strand 56 hybridized to strand 54 and removable from the surface under disassociation conditions. Single-stranded or double-stranded nucleic acid can be used to bind, at the surface, biological binding partners that are partners of the immobilized strand or strands, and used in further study. For example, a binding partner of an immobilized strand or strand

can be immobilized at the surface, and can serve as a binding partner of yet another biological binding partner that then is immobilized, and that species used in studies.

Attachment of a wide variety of nucleic acid strands NA to a moiety R, for example in a way that the strand can biologically bind to its nucleic acid binding partner NAB, can be accomplished with reference to the teaching of examples 10-14. It is to be understood that the procedure given in the examples for the preparation of a DNA chip may be applied to the preparation of any nucleic acid chip, such as an RNA chip. Such a chip can be used to detect DNA hybridization (human genome project, diagnostic scanning of DNA for genetic mutants), to present DNA-binding proteins for the study of subsequent protein-protein interactions for which DNA binding is a critical element of the interaction, using instruments such as SPR devices, or to build an easy analysis DNA computer.

One particularly suitable application for the species X--R--NA or X--R--NAB, and a chip carrying a SAM of one or more of these, is the study of interacting proteins and protein-DNA complexes that regulate gene transcription. Large soluble yeast PolII holoenzyme/mediator complexes must communicate with some other DNA-bound complex to effect transcription. Precise and accurate determination of interactions of these large complexes with DNA-bound transcription factors would be advantageous, and can be accomplished with the technique of the present. (see abstract, Summary of The Invention and col.,15-18, for example.)

The fragmentation of nucleic acids prior to analysis on arrays is well known in the artt as shown by Chee et al., where it is disclosed through out the reference that, for example, 1.3 kb RNA transcripts were fragmented and hybridized to the chip. The single-stranded material can optionally be fragmented to generate smaller nucleic acids with less significant secondary structure than longer nucleic acids. To diminish the effects due to secondary structure, one can employ shorter targets (i.e., by target fragmentation) or use more stringent hybridization conditions. These results demonstrate the advantages provided by the DNA chips of the invention to genetic analysis. Therefore fragmentation of nucleic acids before contacting to a substrate is obvious and well practiced in the art as described by Chee et al.

4. Claims 21-27 are allowed.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jezia Riley whose telephone number is 571-272-0786. The examiner can normally be reached on 9:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 571-272-0782. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuesday, April 27, 2004

JEZIA RILEY
PRIMARY EXAMINER